

IONISATION OF HYDROGEN AND OXYGEN AT THE THREE  
PHASE BOUNDARY FORMED BY THE CONTACT OF ALKALINE  
SOLUTIONS WITH SMOOTH METALLIC SURFACES

by

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Abstract\*

The ionisation of hydrogen and oxygen in concentrated alkaline solutions was studied at various temperatures with electrodes partly immersed in the electrolyte.

It was shown that the ionisation current increased by a factor of more than ten or even by a factor of more than a hundred if an electrolyte film wetting the electrolyte was formed. The width of the reaction zone of the oxygen ionisation depends on the temperature and potential of the electrode.

It was established that at temperatures lower than 30 C the speed of the process at a silver electrode is determined not only by diffusion but also by the true kinetics of the oxygen ionisation. At higher temperatures the limiting factor is diffusion. The energy of activation of oxygen diffusion in concentrated alkaline solutions was determined.

For a series of metals the temperature at which the true kinetics of oxygen ionisation changes over to diffusion kinetics was determined.

It was shown that the oxygen ionisation current depends on the nature of the metal, the temperature and the concentration of the solution; for a given temperature and concentration palladium shows a higher current than other metals.

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